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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------|------------------|
| 10/666,674  | 09/18/2003  | Nobuyuki Ito         | CU-3362              | 8247             |
| 26530   | 7590        | 04/25/2006           | EXAMINER             |                  |
| LADAS & PARRY LLP<br>224 SOUTH MICHIGAN AVENUE<br>SUITE 1600<br>CHICAGO, IL 60604 |             |                      | CLEVELAND, MICHAEL B |                  |
|   |             |                      | ART UNIT             | PAPER NUMBER     |
|   |             |                      | 1762                 |                  |

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

CM

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/666,674 | <b>Applicant(s)</b><br>ITO, NOBUYUKI |  |
|                              | <b>Examiner</b><br>Michael Cleveland | <b>Art Unit</b><br>1762              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.  
 4a) Of the above claim(s) 4-14 is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-3 and 15 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 4-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 9/17/2004.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification as originally filed does not teach or suggest that the substrate is hot enough to evaporate the liquid organic EL material not yet discharged nor does it teach or suggest preventing air-drying.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. (WO98/24271, hereafter '271. U.S. Patent Application Publication 2003/0054186 is used as translation) in view of Kawase (WO01/70506, hereafter '506).

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‘271 teaches a method of manufacturing an organic EL display by an ink jet method, wherein a uniform organic EL layer is formed by a process of discharge-placing on a substrate, at least an organic material in the form of solution [0010, 0050].

‘271 does not explicitly teach drying the ink by depositing it on a heated substrate that is hot enough to evaporate material in the ink-jet nozzles. However, it is known in the art of ink-jet printing to form full color displays to increase the speed of evaporation and reduce clogging of the nozzles by heating the substrate and flowing an inert gas. See, for instance, ‘506, p.10. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited the solution of ‘271 on a heated substrate in order to have increased productivity by reducing the amount of time needed to dry the substrate while reducing potential clogging by such method.

Claim 3: ‘271 teaches the production of a 2-D array of pixels (Figs. 8, 13). The Examiner takes Official Notice that it is common to move an ink-jet nozzle and substrate relative to one another when providing a pattern, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have done so to ink-jet print the pixels of ‘271.

6. Claims 2 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita ‘271 in view of Kawase ‘506, as applied to claim 1, and further in view of Drake (U.S. Patent 5,017,941, hereafter ‘941).

‘271 and ‘344 are discussed above, but do not explicitly teach controlling the ink to a constant temperature by cooling. However, it is well known in the art of ink-jet printing to maintain a constant temperature of the ink by cooling the ink-jet head to avoid disruption of the printing properties. See, e.g., ‘941, col. 1, lines 22-27 and col. 2, lines 52-57. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have cooled the ink-jet ink to have maintained a constant temperature during the printing of ‘271 in order to have maintained a constant temperatures and to have avoided changing the printing properties.

***Response to Arguments***

7. Applicant's arguments filed 2/28/2006 have been fully considered but they are not persuasive.

Applicant's arguments regarding the rejection under 35 USC 112, 1<sup>st</sup> paragraph are noted. Regarding the limitation that the substrate is hot enough to evaporate the liquid organic EL material not yet discharged, Applicant's arguments are convincing, particularly in view of the Examiner's interpretation of the limitation. Regarding the limitation of preventing air-drying, Applicant's arguments are not convincing because the term "evaporation of the solvent from the surface of the liquid drop" is not synonymous with the term "air drying" because air is not mentioned. Furthermore, even if there were a nexus between the terms, there is no indication that evaporation of the solvent from the surface of the liquid drop is prevented. Applicant argues that the term is also supported by the language "to dry by heating immediately after discharge, at most within 60 seconds". The argument is unconvincing because the cited passage in no way indicates the absence of air.

Applicant argues that Kawase does not use heat above the boiling point of the solvent in the ink. The argument is unconvincing because the claim require that the heat is "hot enough to evaporate the liquid organic EL material discharged on the heated substrate and the liquid organic EL material present in the nozzle not yet discharged". They are the same material, and Kawase teaches that the substrate may be heated to evaporate the solvent. Therefore, the substrate is hot enough to evaporate the undischarged material as well.

Applicant's argument that the last two lines of p. 10 of Kawase indicate that when low boiling solvents are used, the substrate is not heated is incorrect because the first two lines of p. 11 expressly state that when low boiling solvents are used, the substrate should be heated at a temperature greater than that of the head.


Applicant's arguments regarding high temperatures are unconvincing because no specific temperature is recited. The claims do not recite a temperature higher than the normal boiling point of the solvent nor a temperature sufficient to cause evaporation in the absence of a gas flow.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Michael Cleveland  
Primary Examiner  
Art Unit 1762

4/23/2006